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American Mining Congress

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STANDING COMMITTEES FOR THE YEAR 1910

At each annual session of the American Mining Congress the principal part of its work for the ensuing year is outlined by resolutions adopted by vote of the delegates. The performance of this work calls for the appointment of a number of standing committees, the members of which are all selected with the idea of securing those best qualified to serve.

These committees prosecute their work between sessions and render reports of their transactions or conclusions at the first ensuing annual session. As a means of facilitating their work the Monthly Bulletin is designed to serve as a medium for the presentation of ideas from the membership generally upon topics in which particular interest is felt. The columns of the Bulletin are open to the committees and the membership for the discussion of any subject relating to mining, and all communications from members should be sent to the Secretary of the Mining Congress, who will direct same to the proper committee in case they are not intended for publication.

Below are the standing committees for the year 1910:

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MEMBERSHIP

The following persons were duly elected to membership in the American Mining Congress during the month of April, 1910:

M. W. DUNCAN.....Gold Beach, Ore.
T. J. SEUFERT.....204 Board of Trade Bldg., Portland, Ore.
J. N. BLAIR.....403 Abington Bldg., Portland, Ore.
M. S. HART.....603 Board of Trade Bldg., Portland, Ore.
J. R. BENT.....Oglesby, Ill.
E. T. BENT.....Chicago, Ill.
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CHANGE OF ADDRESS

Members will please notify the Secretary promptly upon change of postoffice address. This will facilitate regular delivery of the Monthly Bulletin and other pamphlets, and will avoid much annoying work in our mailing department. As is noted on the first page of this issue, the Monthly Bulletin has been admitted to the privilege of second-class mailing in the postoffice.

LOS ANGELES MEETING

As previously announced, the place of the 1910 convention, which is the thirteenth annual, is Los Angeles, California, and the date has been fixed at September 26 to October 1.

Mr. Sidney Norman, Secretary of the Los Angeles Branch, has been named as the director of local arrangements and is at the head of the Los Angeles committee. Under his able direction there will be nothing lacking in the local preparations to make this meeting a great and memorable one, and all members and delegates who attend will have good reason to remember the hospitality and welcome of the mining and business men of this metropolis of the Southwest.

Mr. Norman advises that he has already secured the consent of all railroads to a round-trip rate of one and a third fares from all points, for the meeting, and even some concessions from this rate are expected.

Excursions, arranged so as not to conflict with the program of the convention, will be run to the oil fields in the Bakersfield district, and to some of the mining districts of Arizona.

An excursion to the Catalina Islands will be arranged for the wives and lady friends of the delegates.

The Official Call will shortly be issued, and, as usual, the governors of states, commercial organizations, mayors of cities, etc., will be invited to appoint delegates to participate in the proceedings of the convention. Members of the Mining Congress should plan early to be present at this meeting during the whole week.

MORTUARY

THOMAS F. WALSH

Born in Clonmel, Tipperary County, Ireland, in 1851. Was apprenticed to a millwright in 1866, and after learning his trade, emigrated to America, landing at Worcester, Mass., in 1870. Removed to Colorado in 1871, working as a carpenter in building bridges. In 1873 was a prospector in the vicinity of Del Norte, Colo., and in 1874 removed to Central City. Went to the Black

Hills, South Dakota, at the beginning of the mining excitement there, and was eminently successful in his mining ventures, leaving South Dakota in 1878, with a small fortune, for Leadville, Colo., where a new mining excitement was on. For a while he operated the Grand Hotel in Leadville, which soon became famous as a hostelry where many noted mining men stopped, but he was soon drawn into the mining business again. In 1879 he was married to Miss Carrie Reed of Leadville.

His unusual good judgment brought success in the Leadville fields, and he continued here until early in the nineties. He introduced the Austin pyritic smelting process into Leadville, which meant much for that camp.

In 1896 he discovered the famous Camp Bird mine at Ouray, Colo., which after careful development under his direction was sold to an English syndicate in 1902 for about seven million dollars. This was the last of his important mining ventures, although he continued actively in the business until his death. Several years ago he provided an endowment for the Colorado School of Mines at Golden, to be used in exploitation for the rare minerals.

His residence during late years was at Wolhurst, the old country seat of Senator Edward O. Wolcott, near Denver.

He died at his winter residence in Washington, D. C., on April 8, 1910.

JAMES A. McCLURG

In 1880 Mr. McClurg settled in Denver, coming direct from Chicago, where he was born in 1857. Was engaged in business here until Cripple Creek began to open up, when he entered the mining business in that district. His investments there proved to be unusually profitable and he was soon a wealthy man. Later he disposed of most of his Cripple Creek holdings, but continued to mine in other districts of the state.

More recently, he became active in real estate circles, and the wealth he amassed in mining was largely put into Denver real estate. His holdings included large office buildings, apartment houses and miscellaneous investments.

In 1887 he was married to Miss Marcia Moffat, daughter of David H. Moffat of the First National Bank and one of the West's most noted financiers.

He died on May 4, 1910, at his Denver residence, 906 Grant street, of pneumonia.

BUREAU OF MINES BILL IS ADOPTED

When this issue of the Monthly Bulletin reaches its readers it will hardly be news to state that the Senate has passed the bill providing for a Bureau of Mines, since the press dispatches of May 2nd announced that the Senate had adopted, with some slight amendments, the measure previously passed by the House on January 25th, and that we are now assured of the early establishment of this Bureau.

The opposition to the bill in the Senate proved to be inconsiderable, as was previously predicted, while two of the Senate amendments gave some strength to the bill. One of these amendments increased the salary of the Director from $5,000 to $6,000 per annum, and another changed the name of the official head from Commissioner to Director. The Bureau will be a part of the Interior Department, and will be co-ordinate with the Geological Survey.

The new Bureau will take from the Geological Survey all of the technologic work relating to the analyzing and testing of structural materials and mineral fuel substances, and the investigation of mine explosions. This work has never been a component part of the Survey, being unauthorized by the specific act creating the Survey, but it has been carried on by that organization during the last few years through special appropriations made from year to year. It is entirely foreign to the regular work of the Geological Survey and its removal will really strengthen that body for its own work.

It is assuring to friends of the bill to know that it had the support of the ablest and most influential members of the Senate, which will be important when it comes to getting appropriations to carry on its work.

Senator Carter of Montana, in urging support of the bill, remarks:

> The purpose of the bill is to establish a bureau of mines in the Interior Department. Much attention is now being given to the mining industry in a desultory sort of way through the Geological Survey Service. We gather statistics for the purpose of throwing light on all kinds of mining in relation to production and the value thereof. I believe about

$150,000 per annum is spent in that field of investigation. The work is conducted under the Geological Survey and the direct purpose is to acquire knowledge of the extent of mining operations and the output rather than to inquire into the methods of mining and the means of preventing the constant recurrence of disastrous explosions resulting in loss of life. The various States have mining laws providing in different ways for the protection of the lives of the miners. Laws on this subject, as on all other subjects, fail in the element of uniformity throughout the States. It is very desirable that the laws relating to mining should be uniform, and of the best; and it is important that the General Government should be able to communicate to the miners and the mining departments of the respective States accurate information with reference to the best appliances known to modern science for the preservation of life and the prevention of the destruction of property.

Senator Sutherland of Utah, in urging an amendment raising the salary of the Director to $6,000 per year, says:

I think a salary of $6,000 paid to the man who will take charge of this bureau is little enough. The position requires a man of training and technical knowledge. The Senator from Montana [Mr. Carter] has very well said that the man who should be selected for this post is such a man as could command two or three times the salary in any private occupation.

This is a great bureau which we are undertaking to create. The mining industry of this country is second only to agriculture in its production. The mining industry of this country is producing today over $2,000,000,000 of wealth and employs over 1,000,000 men. The duties which will be imposed upon the chief of this service are exceedingly important, requiring high skill, training, and technical knowledge, and I think a salary of $6,000 is not a bit too much to pay him.

Senator Burkett of Nebraska made an exceptionally strong plea for a Mining Bureau in the following remarks:

This is the only nation in the world that has not this sort of a bureau. We are the only Government that has not already undertaken to do and is not doing what this bill provides to be done for the mining interests and the people engaged in that business in this country. We can not do this as a State. One hundred years of history in this country has shown that the States will not do the work, and they can not do it properly. There are several reasons why they will never do it. In the first place, there are a good many States whose mining interests are small, and if this work is to be done it must be done by the Federal Government; and it is of enough importance to the whole people to warrant the Federal Government in taking hold of it.

The mining interest in some of the States is so small that they would hardly be justified, on account of the expense, in establishing a Bureau of Mining in those States. In my judgment it is one of those things, therefore, that the Federal Government should undertake.

I can hardly understand by what process of reasoning any person would hesitate to vote for this bill on the question of the propriety of establishing the Bureau of Mines. If we take up the agricultural appropriation bill alone, we find in it perhaps a dozen bureaus to look after things that the State does not look after, and yet are as much the proper duty of States as this is. We have in the Interior Department a Bureau of Education. In the Agricultural Department we have a Weather Bureau. We are now considering here very seriously the question of establishing a Bureau of Health. In the Agricultural Department we have a Bureau of Animal Industry; we have in the Interior Department a Bureau of Irrigation; in the Agricultural Department a Bureau of Plant Industry; a Bureau of Forestry and a Bureau of Public Roads.

If we look up the statistics and the history of bureaus of mines in other countries to see what they have accomplished, we can not long hesitate in realizing the importance of this service to the men who are employed in this industry. Take the statistics of many other countries as they are found in this report. It shows that the death list has been decreasing year by year. They have deeper mines and they are more subject to the explosion of gas and to dust explosions than we are in this country. Yet those other countries, by reason of supervision, by reason of the investigations that are made through their mining bureaus, have been able to reduce their death list and the list of casualties, while in the United States we have been going along apparently increasing them year by year.

I remember some three years ago, after a dreadful mine disaster, which aroused the whole country from end to end, Congress appropriated $200,000 in one lump sum, and set experts to work to investigate the causes and to try to invent a remedy and to recommend a remedy in the way of suitable legislation. It seems to me that this measure is the fruit and the result of what we did two or three years ago.

That investigation, which was made by those experts, for which we appropriated, as I now recall, $200,000, has called the attention of the country to the importance of this kind of legislation; and we ought not, in justice to the importance of the matter, halt or hesitate even upon the question which the Senator from New York raises.

Senator Paynter of Kentucky refutes the idea that the provisions of the bill attempt any invasion of state rights, or that they undertake work which could be more appropriately carried on by the individual states. He says:

I do not agree with the Senator from New York [Mr. Root] that the bill is an attempted invasion of the rights of the States. It does not create an officer designated as director of mines, it refers to him as a director of the Bureau of Mines. There is not a line or word in the bill which indicates that it is an attempt to interfere in any way whatever with the right of the States to control mines. Even without section 5, which has been suggested by the committee, there is not a word in the bill that suggests that Congress has attempted to usurp any of the functions which belong to the States. Under this bill there will be no regulation of mines by the Federal Government, the whole purpose of it is to enable the Government to acquire information that shall result beneficially to the owners of mines and their employees, consequently beneficially to the whole people of the country. I am very heartily in favor of the amendment—section 5—for it removes any doubt that the bill in any way will interfere with the rights of the State with regard to this matter. The Government spends a great deal of money in the distribution of garden seed with a view of helping the farming interests of the country by improving the seed used in planting. It expends large sums to obtain information for the benefit of the farmers and disseminates the information by the distribution of the farm bulletin and otherwise. A great pest exists in the South, which diminishes the cotton crop, and it is known as the boll weevil. It threatens to lay waste a vast area of magnificent land suitable for the growing of cotton. The Government has spent large sums of money in an effort to discover a way to destroy the boll weevil. While the States might distribute garden seed and obtain information that would help its citizens and add to the prosperity of the country, yet it has been regarded as best that the Federal Government should do so, as it is done for the whole people at a common expense. The whole people are benefited by improved methods of farming and are enriched by the protection of the section of the country from the boll weevil, where cotton is grown.

It is important to gather information and furnish it to the people to aid in their prosperity and happiness; how much more important it is to

do so to save the limbs and lives of thousands of toilers in the land? It is hoped that the lives of thousands of miners will be saved by the discovery of improved methods for operating mines and by their proper ventilation. I would be willing to see the Government incur the expense of the Bureau of Mines for centuries if it could save but one catastrophe like that of Cherry, Ill., with its tragic results. We owe much to the brave and industrious men who hazard life to extract the riches from the earth and to remove the coal that furnishes the railroads, steamships, manufacturing plants, and our homes with fuel. Every safeguard within the power of the State and Federal Government should be thrown around them, not only for the protection of the country, but for humane reasons. To save the lives of miners is to save women from widowhood and children from orphanage. When we read of the great disasters in mines we are overwhelmed with horror, they appeal to us, or should do so, to devise some means for the acquisition of such knowledge as will prevent them as far as possible. Those who work thousands of feet below the surface of the earth merit the greatest care which the States and Federal Government can bestow upon them.

Senator Dolliver of Iowa remarks:

I have received from those interested in the mining of coal and gypsum and other mining industries in my own State so many requests for legislation such as that suggested by the bill that I think I ought at least to state to the Senate the attitude of our mining people in this legislation.

I give this bill hearty support, because it is a step toward an orderly conservation of the mining resources of the country. One of the most alarming leakages and losses in the administration of our natural wealth lies in the methods of mining long since superseded by the progress of the industry in other countries.

The bill does not enlarge even the present jurisdiction which we are exercising. It transfers from the Geological Survey these practical subjects, which, however they may involve scientific research, are not strictly within the region of the speculative or even the practical work of the geologist. These functions are transferred to another bureau of the Department of the Interior, to be called the Bureau of Mines.

Finally, I believe that this bill is a very wise and a very humane response of the Government of the United States to a petition that has gone up from every coal-mining region in the country for a better study of the problems of safety in mining, and especially in the mining of coal. The State of Iowa, though very few people know it, is, I think, the seventh State of the Union in the production of coal, and our mining population lives in constant fear of just such misfortunes as have fallen upon that industry in States like Illinois and Kentucky within recent months. No such tragedies have ever been recorded in the industrial life of the world as we have seen in the United States in the mining regions within the last few months.

Now, those people who are practically engaged in mining coal have instinctively looked to the Government of the United States. The legislature of Illinois, which was in session when the disaster at the Cherry mines occurred, felt almost intuitively that the problem was larger than the State of Illinois, and while the legislature took immediate steps to do what it seemed to be within the power of the State to do, they did not fail to ask the Government of the United States to co-operate with the great State of Illinois in those provisions which might tend, at least in the future, to reduce to the minimum the loss caused by the appalling disasters.

Therefore I favor the bill for these three reasons: The conservation of our mining resources, the study of the economies which have been suggested by science in the production and use of our mineral fuels, and those humane considerations which have been pointed out by disasters without parallel in their tragedy in the whole field of our industrial life.

I think the thanks of the mining population of the United States are due to the honored Senator from West Virginia, as well as to the senior Senator from Ohio [Mr. Dick], and I hope that no objection will be made to the creation of this bureau, which, whether it fills all our hopes about it or not, will at least express the interest and sympathy of the people of the United States toward this industry, so full of perils and so afflicted by grievous accidents.

Senator Guggenheim of Colorado believes the bill will be the means of saving millons annually to mine owners. He says:

I believe in specializing this particular work. Some one has mentioned the fact that it will mean an additional expense. I think I can say with some knowledge that we in this country, have a great deal to learn, not only in reference to metallurgy, but also in mining. There have been great strides made in recent years, particularly in metallurgy and mining, in Europe and elsewhere.

We believe in this country that we know the most about mining and metallurgy and how to keep our costs down to a minimum. We should not regard the expense for the establishment and maintenance of the bureau. The cost is very nominal and I venture the remark that an efficient director of ability can impart knowledge to the mine owners of this country that will mean an annual saving of at least $50,000,000. Besides, the bureau will be a means of saving many lives and preventing many unfortunate accidents, which is more important than the saving of money.

Senator Scott of West Virginia, who brought up the bill, said:

A Federal Bureau of Mines is a serious national need. An intolerable situation, which must be met by prompt and efficient action, presents itself in the excessive and increasing death roll and the waste of resources in American mines—8,000 to 10,000 miners killed or injured each year; probably 30,000 men killed and 100,000 injured during the past twenty years in our coal mines alone (11,000 widows made and 30,000 children left fatherless), and this with safer national mining conditions than can be found in any other country.

And this, Mr. President, is the condition today of the mines of this country. This is alone in regard to coal mines. Only a few days ago, as the Senator from Alabama [Mr. Johnson] knows, near the town of Birmingham, Ala., 43 men were taken out from one of the mines dead. Just across the river from my home, in Steubenville, Ohio, we buried 18 only week before last from a mine accident.

I am willing to have this bill perfected if Senators think it is imperfect. All a want is a bill that will protect these industrious people and will conserve our resources. When we have perfected the bill to the best of our judgment, let us give it a trial and see if we can not in some way at least show that we know how in this country to protect the lives of our miners as they do in small European countries.

HYDRO-ELECTRIC POWER AND CONSERVATION

(By General Irving Hale, Member of the Colorado Conservation Commission.)

With the development of electric power during the past quarter-century, the electrical utilization and transmission of water-power to supply light, power and transportation has been an attractive dream, and, to a considerable extent, a practical reality.

Progress in this direction has been slower than anticipated for two reasons.

First—The direct-current moderate-voltage system required such an excessive quantity of wire to transmit power any considerable distance, as to make the cost commercially prohibitive.

Second—Since the introduction of the alternating-current high-voltage system, which permits transmission to long distances with reasonable expenditure for copper, the principal obstacle has been the high cost of water-power itself.

The common expression, "cheap and unlimited water-power of our mountain streams," is a popular fallacy, based on the apparently irresistible rush of these torrents during the flood season. In fall and winter these rivers dwindle to one-twentieth or sometimes one-fiftieth of their maximum flow. A hydro-electric plant must give an approximately steady load throughout the year. This necessitates immense and expensive reservoirs to store the flood-waters and let them out during low-water periods. To this must be added long pipes and tunnels, power-houses, water-wheels, electric generators, switchboard, transformers, long transmission lines through difficult country, rotary converters and motors for reconverting the electrical into mechanical energy.

So hydro-electric installations, instead of being cheap, usually cost three to five times as much per horsepower as steam-plants Their operating expenses are less, as they save coal and firemen. The problem is, therefore, a comparison of interest, taxes and depreciation on the higher cost of the hydro-electric plant, against fuel and extra labor in the steam-plant. Just where the two plans

meet, depends on the cost of the water-power, distance of transmission, price of fuel, and other conditions.

As Colorado's water-powers are expensive, and her coal deposits are numerous and widely distributed, it is a serious question as to which of these resources will be the more extensively utilized.

These considerations explain the difficulty experienced during the past twenty years in enlisting capital to develop our water-powers, and the fact that most of the plants installed are in the mining districts. Nevertheless, much has been done and much more will be accomplished in utilizing these mountain streams; and the time will come when most of our mines, and numerous other industries, and the lighting and transportation of many cities and towns, will be operated by hydro-electric energy.

Conservation.

Much has been said and general sentiment is growing in favor of the conservation of natural resources. While there should be no dispute as to the importance of avoiding waste, there is room for honest argument as to what extent present reasonable needs should be hampered for the benefit of far-off posterity. This discussion, however, does not affect the development of water-power, which differs diametrically from other resources. Timber, coal and other materials are conserved by not using them, or better by using them moderately and economically. Water-power is conserved only by using it, and its non-use wastes it absolutely and beyond recall. Every second-foot of water that runs unharnessed from timber-line to plain, wastes continually and irretrievably over 500 horsepower that could be converted into electric energy and furnish the light and power of a town of 10,000 population. A stream carrying 100 cubic-feet of water per second under 2,000 feet head will develop 18,000 horsepower, which would burn, in the average steam plants, over 400,000 tons of coal per year. This saving is effected without the slightest waste or deterioration of the water itself for domestic use, irrigation or navigation. Moreover, water-power competition stimulates the development of more efficient steam and gas machinery, further economizing the consumption of fuel. Cheaper power and electro-chemistry and metallurgy encourages all lines of manufacture, production of chemicals from natural compounds, and reduction of low-grade ores that would be unmined or thrown over the dump.

The utilization of water-power inspires industries and resources that would otherwise be unprofitable or remain undeveloped, conserves vast energies that have been running to waste, and saves quantities of fuel for our beloved descendants in the distant centuries or millennia.

Governmental Restrictions.

In view of the great benefits to be derived from water-power, and the natural obstacles in the way of its development, it is unfortunate to have this desirable enterprise further hampered by unjust artificial restrictions and impositions.

The Forest Service theory that land governs the use of water that runs through and below it is an extreme application of the old rule of riparian rights, long since abandoned as unfair and disastrous to the development of the great West. Water is the salvation of this country, and should not be controlled by the owners of land bordering upon its headwaters. A few men could take up worthless mountain ranches near the heads of streams, and thereby dictate terms and levy tribute from all the farms of the fertile plains and industries of the cities who can utilize the water for irrigation and power. Such domination is as unjust and undesirable by the government as by individuals. The law that the use of water belongs to the people who appropriate and actually develop and utilize it, has worked well for years and needs no radical change.

Admitting that forests regulate water flow (although some able authorities deny this), water-powers derive comparatively little, if any, benefit from this action. Forests retain the snow and decrease the run-off in winter, when the power-plant suffers its greatest shortage. To maintain the required steady flow throughout the year, the power company must build great reservoirs to store all the water of the stream. Having incurred this enormous expense, it cares little as to just when the water comes down, or the minor regulation affected by the forest.

As the National Forest is of little or no value to the power-plant, as compared with its benefits to the irrigation, timber and grazing industries, its fee, if allowable at all, should be a small proportion of the expense of administering the service. On the other hand, this charge, which rapidly increases, would average many times the total cost of maintenance of the Forest Reserve included in its water-shed. The injustice of this is evident.

Federal Control.

Now comes the National Conservation Commission and others, urging federal control, and using public land needed for water-power sites as a lever to persuade or force the states to surrender their water-rights to the general government.

It is generally admitted, even by the advocates of federal supervision, that the waters of streams belong to the people of the states, and the United States has no ownership or control over them, except in regard to matters affecting interstate navigation. A parcel of government land worth practically nothing except for its proximity to a stream owned by the state, is no just ground for compelling the state to give up its rights, or charging an annual fee many times the total actual value of the land. This is riparian rights with a vengeance. It would be as reasonable for the owner of a little rocky ranch in a canyon, which controls the key to the passage of a railroad that has acquired rights of way for hundreds of miles and will cost millions to build, to demand an interest in the road or an annual percentage of its earnings. Such a dog-in-the-manger would be promptly knocked out by condemnation proceedings.

The advocates of federal control claim that the government owns this land, is not obliged to sell it unless it desires, can demand whatever price it chooses, and can make this charge in the form of an annual fee measured by the flow of water, which they admit belongs to the states. Such a spirit, which would not be tolerated in an individual owner, is still less excusable in the government, which holds the land in trust for the use of the people. If this policy had been applied to land suitable for agriculture and the construction of irrigation works, this productive Western country would have remained the desert waste that the statesmen of a hundred years ago pictured it. The same policy will exercise a similar paralyzing influence on the development of our power resources.

The chief plea for federal control is to preserve these water-powers for the people. What people—the people of governmental bureaus who need the fees for the administration of their departments, or the people of the East who long since acquired and utilized their lands and streams, and now want a share of Western resources, or the people whose courage and energy settled and are developing this Western country? Under present state laws, these water-powers are and have been open to all the people, Western or Eastern, who want to appropriate, develop and utilize them. How

will these people be benefited by annoying restrictions and fees administered, whether directly to the individual, or hypodermically through a power company? These fees increase the cost and consequently the charge for power, and eventually fall upon the users, or the very people whom they are so concerned in protecting against the rapacity of an imaginary monopoly.

In order to popularize these withdrawals and impositions, and tempt the people of the states to assign their rights to the federal government, it was considered politic to set up a bogy in the form of the "water-power trust." No such trust or monopoly exists, or is contemplated, or could be practicable under existing laws. Water-powers cannot be cornered and held like land, or coal, or grain, or railroads, but can be retained only by developing and utilizing them. No corporation, however predatory, would spend millions to build plants for which there is no power-market, merely to corral the water—but if it did, its efforts to sell its product would give cheap and abundant power, and the people would get the benefit. If the companies charge excessive rates, other powers will enter the field—unless deterred by harassing government fees and restrictions. Even if they all combine, their prices must be moderate to meet competition with steam generated by cheap coal at the mines. And as a last resort, the state can step in and insist upon reasonable charges to give a fair return on the investment. When there is any real sign of abuse or attempt to monopolize these resources, it will be time enough to change the present policy which has worked so beneficently in building up the country.

For the last fifteen years, when long-distance transmission has been commercially practicable, these water-powers have been free to the public, and their torrents have gone thundering down our canyons, and promoters thundering over the country clamoring for their development. The trouble has been, not to protect these powers against the greed of capitalists, but to induce them, or the common people, or anybody, to invest their money in these somewhat hazardous undertakings. Now that capital is beginning to take some interest, no undue obstacle should be thrown in the way of these enterprises, which will utilize this vast dormant asset, conserve our fuel, operate otherwise unworkable mines, make low-grade ores profitable, stimulate manufactures, reduce the smoke evil in cities, furnish cheaper and more abundant light and power to all the people, and do more than any other single influence to develop this great western Empire.